Research Proposal

Toxicity of Oil and PAHs on Marine and Freshwater Organisms

Problem Title. What are the effects, if any, of trace amounts of oil and polycyclic aromatic hydrocarbons (PAHs) from highways and bridge piers on sensitive aquatic organisms in marine or fresh water environments?

Problem Statement. As part of the hydraulic project approval (HPA) permit negotiations on the Hood Canal Floating Bridge replacement project, biologists attempted to correlate oil and PAHs released as a result of creosote wood piling removal, with herring-egg damage caused by the Exxon Valdez oil spill in 1989. The volumes and concentrations of oil and PAHs from the Valdez were several orders of magnitude greater than those anticipated from the Hood Canal Bridge replacement. Further, there is no reason to expect the mix of oils and PAHs from the Hood Canal project and the Exxon Valdez spill to be the same. The lack of comparability in both concentration and mixture leaves serious questions about the validity of the correlation. Reliance on this correlation may create problems getting permits for ferry terminal improvements in the future.

Additional questions that could be addressed by this proposal:

- What levels of oils and PAHs are environmentally significant in marine and fresh water environments?
- What amount of creosote oil and PAH release is expected from removal of pilings from existing structures during maintenance and repair?

Literature Search. No studies identified.

Research Methods. This may be a prime topic for a research white paper. If research funds can be found, contract a research institution to evaluate PAH and oil levels that can be considered low risk for aquatic organisms, particularly herring eggs, in intermittent discharges such as stormwater discharges or pier removal. Review technical literature on a regular basis for relevant developments.

Partnering Opportunities. None.

Estimate of Costs and Research Duration Estimated costs have not been developed, but are expected to be less than $50,000.

Urgency, Payoff Potential, and Implementation Research could provide technical justification for not targeting oils or PAHs for runoff treatment in certain situations.

Research Proposer.

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Research Monitor (to be assigned, as needed, by the research program administrator)

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